## Claim Amendments

1. (original) A downhole tool positioning assembly comprising:

a housing having upper and lower ends adapted for connection to a tool string;

a fluid passageway for providing fluid communication through the housing;

a radiation detection unit positioned within the housing for measuring radiation in the downhole environment and for generating a signal corresponding to the measured radiation;

a communication unit positioned within the housing;

a control unit positioned within the housing for receiving signals from the radiation detection unit and for controlling the communication unit; and

a power source for providing power to the radiation detection unit, the control unit and the communication unit.

2. (original) The tool positioning assembly of claim 1, further comprising a casing collar locator positioned within the housing.

3. (original) The tool positioning assembly of claim 2, wherein the casing collar locator comprises:

an electromagnetic coil and magnet for electromagnetically sensing a casing collar; and

an electric circuit for generating a signal when said coil electromagnetically senses a casing collar.

4. (currently amended) The tool positioning assembly of claim 2, [further comprising a] <u>wherein said</u> control unit positioned within the housing [for receiving] <u>receives</u> signals from the [radiation detection unit, the] casing collar locator[, and] for controlling the communication unit.

5. (original) The tool positioning assembly of claim 1, wherein the radiation detection unit comprises a gamma ray detector or a neutron detector.

6. (original) The tool positioning assembly of claim 1, wherein the tool string is carried by a tubing string.

7. (original) The tool positioning assembly of claim 1, wherein the tool string is carried by coiled tubing.

8. (original) The tool positioning assembly of claim 1, further comprising a pressure isolation means in the fluid passageway for preventing premature fluid communication between the tubing and the downhole tool.

9. (original) The tool positioning assembly of claim 8, wherein the pressure isolation means comprises a rupture disk, a ball drop actuator, or a flow rate actuator.

10. (currently amended) The tool positioning assembly of claim 1, wherein the communication unit comprises:

[a fluid passageway therethrough;]

a fluid chamber;

a fluid communication path between the fluid chamber and the fluid passageway;

a <u>first</u> valve positioned within the fluid communication path between the fluid chamber and fluid passageway;

a port for providing fluid communication between the fluid passageway and an exterior of the housing; and

a <u>second</u> valve for restricting fluid flow through the port positioned therein.

11. (currently amended) The tool positioning assembly of claim 10, wherein the <u>first</u> valve [positioned with the fluid communication path between the fluid chamber and the fluid passageway] is an electromagnetic valve.

12. (original) The tool positioning assembly of claim 1, further comprising a pressure isolation means for preventing fluid communication between the coiled tubing and a downhole tool carried by the tool positioning assembly.

13. (original) A tool positioning assembly for positioning a downhole tool connected to a tool string, the tool positioning assembly being carried by coiled tubing and comprising:

a housing having upper and lower ends adapted for connection to a tool string;

a fluid passageway for providing fluid communication through the housing;

a casing collar locator positioned within the housing;

a radiation detection unit positioned within the housing for measuring radiation in the downhole environment and for generating a signal corresponding to the measured radiation;

a mud pulser communication unit positioned within the housing;

a control unit positioned within the housing for receiving signals from the casing collar locator and the radiation detection unit and for controlling the communication unit;

pressure isolation means for preventing fluid communication between the coiled tubing and the downhole tool; and

a power source for providing power to the casing collar locator, the radiation detection unit, the control unit and the communication unit.

14. (original) The tool positioning assembly of claim 13, wherein the radiation detection unit comprises a gamma ray detector or a neutron detector.

15. (currently amended) The tool positioning assembly of claim 13, wherein the mud pulser communication unit comprises:

[a fluid passageway therethrough;]

a fluid chamber;

a fluid communication path between the fluid chamber and the fluid passageway;

a <u>first</u> valve positioned within the fluid communication path between the fluid chamber and fluid passageway;

a port for providing fluid communication between the fluid passageway and an exterior of the housing; and

a <u>second</u> valve for restricting fluid flow through the port positioned therein.

16. (currently amended) The tool positioning assembly of claim 15, wherein the <u>first</u> valve positioned [with the fluid communication path between the fluid chamber and the fluid passageway] is an electromagnetic valve.

17. (original) The tool positioning assembly of claim 13, wherein the casing collar locator comprises:

an electromagnetic coil and magnet for electromagnetically sensing a casing collar; and

an electric circuit for generating a signal when said coil electromagnetically senses a casing collar.

18. (original) The tool positioning assembly of claim 13, wherein the pressure isolation means comprises a rupture disk, a ball drop actuator, or a flow rate actuator.

19. (currently amended) A method for positioning a downhole tool within a wellbore, comprising the steps of:

drilling the wellbore;

generating a wellbore log including at least one measurement of downhole formation characteristics;

connecting a tool string to a tubing, the tool string comprising a tool positioning assembly and the downhole tool;

moving the tubing with the tool string through the wellbore;

flowing fluid through the tubing while moving the tubing and the tool string through the wellbore;

continuously monitoring the pressure of the fluid flowing through the tubing with a fluid pressure sensor;

determining the concentration of radiation emissions within the wellbore;

transmitting data corresponding to the concentration of radiation emissions to the fluid pressure sensor by varying the fluid pressure of the flowing fluid;

determining the depth of the downhole tool by correlating the relative strength of radiation to the wellbore log; and

adjusting the position of the downhole tool by raising or lowering the tubing.

20. (original) The method of claim 19, further comprising the step of activating the downhole tool.

21. (original) The method of claim 19, wherein the step of determining the concentration of radiation emission measures gamma radiation, neutron radiation, or both.

22. (original) The method of claim 19, wherein the wellbore log measures formation characteristics comprising resistivity, neutron emissions, acoustic characteristic, spontaneous potential, or gamma ray emissions.

23. (original) The method of claim 19, further comprising the steps of:

lowering the tubing and tool string after correlating the relative strength of the radiation to the wellbore log; and

raising the tubing and tool string to a preferred location prior to activating the downhole tool.

24. (canceled)

25. (currently amended) The method of claim 19 [24], wherein the step of transmitting data takes place in real time.

26. (original) The method of claim 19, wherein the wellbore penetrates at least one zone of interest and further comprising the step of initially lowering the tubing carrying the tool string into the wellbore to a depth greater than the depth of the zone of interest.

27. (original) The method of claim 19, further comprising the step of positioning a production string within the wellbore and lowering the tubing and the tool string through the production string.

28. (original) The method of claim 19, further comprising the steps of:

generating a casing collar profile prior to lowering the tubing and tool string into the borehole;

after lowering the tubing and tool string into the borehole, detecting casing collars in the wellbore;

transmitting casing collar locations to the surface; and

using the casing collar locations in the step of determining the depth of the downhole tool.

29. (original) The method of claim 19, wherein the tubing is coiled tubing.

30. (currently amended) A method for positioning and activating a downhole tool within a wellbore, comprising the steps of:

drilling the wellbore;

generating a wellbore log, the wellbore log including at least one measurement of downhole formation characteristics;

connecting to coiled tubing a tool string comprising the downhole tool and a tool positioning assembly;

injecting the coiled tubing carrying the tool string into the wellbore;

<u>flowing fluid through the coiled tubing while moving the coiled tubing and the tool string through the wellbore;</u>

<u>continuously monitoring the pressure of the flowing fluid with a fluid pressure sensor;</u>

determining the concentration of radiation emissions within the wellbore;

<u>transmitting radiation data to the fluid pressure sensor by varying the fluid pressure of the flowing fluid;</u>

transmitting data corresponding to the relative strength of radiation to the surface;

determining the location of the downhole tool by correlating the relative strength of radiation to the wellbore log;

adjusting the position of the downhole tool by raising or lowering the coiled tubing; and

activating the downhole tool.

31. (original) The method of claim 30, further comprising the steps of:

lowering the coiled tubing and tool string after correlating the relative strength of the radiation to the wellbore log; and

raising the coiled tubing and tool string to a preferred location prior to activating the downhole tool.

32. (canceled)

33. (original) The method of claim 30, wherein the step of transmitting data takes place in real time.

34. (original) The method of claim 30, wherein the wellbore penetrates at least one zone of interest and further comprising the step of initially injecting the coiled tubing carrying the tool string into the wellbore to a depth greater than the zone of interest.

35. (original) The method of claim 30, further comprising the step of positioning a production string
within the wellbore and injecting the coiled tubing carrying the tool string through the production string.

36. (original) The method of claim 30, wherein the step of determining the concentration of radiation emission measures gamma radiation, neutron radiation, or both.

37. (original) The method of claim 30, wherein the wellbore log measures formation characteristics comprising resistivity, neutron emissions, acoustic characteristic, spontaneous potential, or gamma ray emissions.

38. (original) The method of claim 30, further comprising the steps of:

generating a casing collar profile prior to lowering the tubing and tool string into the borehole;

after lowering the tubing and tool string into the borehole, detecting casing collars in the wellbore;

transmitting casing collar locations to the surface; and

using the casing collar locations in the step of determining the depth of the downhole tool.

39. (original) A method for positioning and activating a downhole tool within a wellbore, comprising the steps of:

drilling the wellbore;

providing a fluid pressure sensor;

generating a wellbore log including at least one measurement of downhole formation characteristics;

connecting a tool string to a tubing, the tool string comprising a tool positioning assembly and the downhole tool;

lowering the tubing with the tool string into the wellbore;

flowing fluid through the tubing while moving the tubing and the tool positioning assembly through the wellbore;

determining the concentration of radiation emissions within the wellbore;

continuously monitoring the pressure of the fluid flowing through the tubing with the fluid pressure sensor;

transmitting data corresponding to the concentration of radiation emissions to the fluid pressure sensor by varying the fluid pressure of the flowing fluid;

determining the location of the downhole tool by correlating the relative strength of radiation to the wellbore log; and

adjusting the position of the downhole tool by raising or lowering the tubing; and activating the downhole tool.

40. (original) The method of claim 39, wherein the step of determining the concentration of radiation emission measures gamma radiation, neutron radiation, or both.

41. (original) The method of claim 39, wherein the wellbore log measures formation characteristics comprising resistivity, neutron emissions, acoustic characteristic, spontaneous potential, or gamma ray emissions.

42. (original) The method of claim 39, further comprising the steps of:

lowering the tubing and tool string after correlating the relative strength of the radiation to the wellbore log; and

raising the tubing and tool string to a preferred location prior to activating the downhole tool.

43. (original) The method of claim 39, wherein the step of transmitting data takes place in real time.

44. (original) The method of claim 39, wherein the wellbore penetrates at least one zone of interest and further comprising the step of injecting the tubing carrying the tool string into the

wellbore to a depth greater than the zone of interest prior determining the concentration of radiation emissions within the wellbore.

45. (original) The method of claim 39, further comprising the step of positioning a production string within the wellbore and lowering the tubing and the tool string through the production string.

46. (original) The method of claim 39, further comprising the steps of:

generating a casing collar profile prior to lowering the tubing and tool string into the borehole;

after lowering the tubing and tool string into the borehole, detecting casing collars in the wellbore;

transmitting casing collar locations to the surface; and

using the casing collar locations in the step of determining the depth of the downhole tool.

47. (original) The method of claim 39, wherein the tubing is coiled tubing.

48. (original) A method for positioning and activating a downhole tool within a wellbore, comprising the steps of:

drilling a wellbore penetrating at least one subterranean zone of interest;

generating a wellbore log and a casing collar profile, the wellbore log including at least a measurement of downhole gamma ray concentrations;

connecting to coiled tubing a tool string comprising at least one downhole tool and a tool positioning assembly, the tool positioning assembly comprising:

a housing having upper and lower ends adapted for connection as part of a tool string;

a fluid passageway for providing fluid communication through the housing;

a radiation detection unit positioned within the housing for measuring radiation in the downhole environment and for generating a signal corresponding to the measured radiation;

a casing collar locator positioned within the housing;

a mud pulser communication unit positioned within the housing;

a control unit positioned within the housing for receiving signals from the casing collar locator and the radiation detection unit and for controlling the communication unit; and

a power source for providing power to the casing collar locator, the radiation detection unit, the control unit and the communication unit;

moving the coiled tubing and tool string through the wellbore;

activating the radiation detection unit and monitoring the concentration of radiation emissions within the wellbore;

activating the casing collar locator;

transmitting data corresponding to the concentration of radiation emissions and casing collar locations to the surface;

determining the location of the downhole tool by correlating the relative strength of radiation and the data obtained from casing collar locator to the wellbore log and the casing collar profile;

subsequently lowering the coiled tubing and tool string to a point lower than the desired point for activating the downhole tool;

raising the coiled tubing and tool string while continuing to monitor radiation emissions until the relative strength of the radiation detected by the radiation detection unit reflects the desired depth for activating the downhole tool; and

activating the downhole tool.

49. (original) The method of claim 48, further comprising the steps of:

flowing fluid through the coiled tubing while moving the coiled tubing carrying the tool string through the wellbore;

continuously monitoring the pressure of the flowing fluid by means of the fluid pressure sensor; and

transmitting radiation data and casing collar locations to the fluid pressure sensor by varying the fluid pressure of the flowing fluid.

50. (original) The method of claim 48, wherein the step of transmitting data takes place in real time.

51. (original) The method of claim 48, wherein the tool string is injected to a depth greater than the zone of interest.

52. (original) The method of claim 48, further comprising the step of positioning a production string within the wellbore and injecting the coiled tubing carrying the tool positioning assembly through the production string.

53. (original) The method of claim 48, wherein the step of monitoring radiation emissions measures gamma radiation, neutron radiation or both.

54. (original) The method of claim 48, wherein the wellbore log measures formation characteristics comprising resistivity, neutron emissions, acoustic characteristic, spontaneous potential, or gamma ray emissions.